

## CLAIMS

What is claimed is:

1. A power system common power source subsystem comprising:

a power source unregulated bus;

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a power source regulated bus;

at least one power source, each of said at least one power source having an output;

a first group of at least one switch, each of said first group of at least one switch coupling a respective one of said at least one power source output to said power source unregulated bus;

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at least one regulator, each of said at least one regulator having an input and an output;

a second group of at least one switch, each of said second group of at least one switch coupling a respective input of said at least one regulator to said power source unregulated bus; and

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a third group of at least one switch, each of said third group of at least one switch coupling a respective one of said at least one regulator output to said power source regulated bus;

a controller having a plurality of outputs, at least one of said plurality of outputs coupled to at least one of said first group of at least one switch, at least one of said plurality of outputs coupled to at least one of said second group of at least one switch, and at least one of said plurality of outputs coupled to at least one of said third group of at least one switch; and

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at least one sensor, each of said at least one sensor having an output coupled to said controller.

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2. The power system common power source subsystem of claim 1 further comprising:

at least one stabilizer, each of said at least one stabilizer having an input coupled to a respective power source, and having an output; and

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a fourth group of at least one switch, each of said fourth group of at least one switch coupling a respective stabilizer output to said power source unregulated bus.

3. The power system common power source subsystem of claim 2 further comprising at least one energy storage element, each of said at least one energy storage element having an output coupled to a respective one of said at least one regulator.

4. The power system common power source subsystem of claim 1 wherein said power source is selected from the group consisting of a battery, a generator, a fuel cell and a solar cell.

5. The power system common power source subsystem of claim 1 wherein said stabilizer comprises a device wherein a first voltage level is converted to a second voltage level.

6. The power system common power source subsystem of claim 1 wherein said energy storage unit is selected from the group consisting of a battery, a flywheel, a capacitor, and an inductor.

7. A power system subsystem component comprising:  
a subsystem unregulated bus;  
a subsystem regulated bus;  
a power source having an output;  
a first group of at least one switch, each of said first group of at least one switch coupling said power source output to said subsystem regulated bus;  
a controller having a plurality of outputs, at least one of said plurality of outputs coupled to at least one of said first group of at least one switch; and  
at least one sensor, each of said at least one sensor having an output coupled to said controller.

8. The power system subsystem component of claim 7 further comprising:

at least one regulator, each of said at least one regulator having an input coupled to said subsystem unregulated bus, and an output; and

a second group of at least one switch, each of said second group of at least one switch coupling a respective output of said at least one regulator to said subsystem regulated bus and wherein said second group of at least one switch is controlled by said controller.

9. The power system subsystem component of claim 7 further comprising:

at least one stabilizer, each of said at least one stabilizer having an input coupled to said subsystem unregulated bus, and having an output; and

a third group of at least one switch, each of said second group of at least one switch coupling a respective stabilizer output to said subsystem regulated bus and wherein said third group of at least one switch is controlled by said controller.

10. The power system subsystem component of claim 7 further comprising:

at least one energy storage element, each of said at least one energy storage element having an output; and

a fourth group of at least one switch, each of said fourth group of at least one switch coupling a respective output of said at least one energy storage element to said subsystem regulated bus and wherein said fourth group of at least one switch is controlled by said controller.

11. The power system subsystem component of claim 7 further comprising:

at least one load; and

a fifth group of at least one switch, each of said fifth group of at least one switch coupling a respective load to said subsystem regulated bus and wherein said fifth group of at least one switch is controlled by said controller.

12. The power system subsystem component of claim 7 wherein said power source is

selected from the group consisting of a battery, a generator, a fuel cell and a solar cell.

13. The power system subsystem component of claim 7 wherein said stabilizer comprises a device wherein a first voltage level is converted to a second voltage level.

5 14. The power system subsystem component of claim 7 wherein said energy storage unit is selected from the group consisting of a battery, a flywheel, a capacitor, and an inductor.

15. A power system comprising:  
10 a common power source component;  
at least one power system subsystem component; and  
an interconnect connecting said common power source component and said at least one power system subsystem component.

15 16. The power system of claim 15 wherein said interconnect includes at least one power interconnect and at least one control signal interconnect.

17. The power system of claim 16 wherein said control signal interconnect comprises an interconnect selected from the group consisting of electrical, optical infrared and  
20 wireless.

18. The system of claim 17 wherein said common power source component comprises:

a power source unregulated bus;  
25 a power source regulated bus;  
at least one power source, each of said at least one power source having an output;  
a first group of at least one switch, each of said first group of at least one switch coupling a respective one of said at least one power source output to said power source unregulated bus;  
30 at least one regulator, each of said at least one regulator having an input and an output;

a second group of at least one switch, each of said second group of at least one switch coupling a respective input of said at least one regulator to said power source unregulated bus; and

5 a third group of at least one switch, each of said third group of at least one switch coupling a respective one of said at least one regulator output to said power source regulated bus;

a controller having a plurality of outputs, at least one of said plurality of outputs coupled to at least one of said first group of at least one switch, at least one of said plurality of outputs coupled to at least one of said second group of at least one switch,  
10 and at least one of said plurality of outputs coupled to at least one of said third group of at least one switch; and

at least one sensor, each of said at least one sensor having an output coupled to said controller.

15 19. The system of claim 17 wherein said power system subsystem component comprises:

a subsystem unregulated bus;

a subsystem regulated bus;

a power source having an output;

20 a first group of at least one switch, each of said first group of at least one switch coupling said power source output to said subsystem regulated bus;

a controller having a plurality of outputs, at least one of said plurality of outputs coupled to at least one of said first group of at least one switch; and

25 at least one sensor, each of said at least one sensor having an output coupled to said controller.

20. The system of claim 18 wherein said power system common power source subsystem further comprises:

30 at least one stabilizer, each of said at least one stabilizer having an input coupled to a respective power source, and having an output; and

a fourth group of at least one switch, each of said fourth group of at least one switch coupling a respective stabilizer output to said power source unregulated bus.

21. The system of claim 18 wherein said power system common power source subsystem further comprises at least one energy storage element, each of said at least one energy storage element having an output coupled to a respective one of said at least one regulator.

22. The system of claim 18 wherein said power source is selected from the group consisting of a battery, a generator, a fuel cell and a solar cell.

23. The system of claim 18 wherein said stabilizer comprises a device wherein a first voltage level is converted to a second voltage level.

24. The system of claim 18 wherein said energy storage unit is selected from the group consisting of a battery, a flywheel, a capacitor, and an inductor.

25. The system of claim 19 wherein said power system subsystem component further comprises:

at least one regulator, each of said at least one regulator having an input coupled to said subsystem unregulated bus, and an output; and

a second group of at least one switch, each of said second group of at least one switch coupling a respective output of said at least one regulator to said subsystem regulated bus and wherein said second group of at least one switch is controlled by said controller.

26. The power system subsystem component of claim 19 further comprising:

at least one stabilizer, each of said at least one stabilizer having an input coupled to said subsystem unregulated bus, and having an output; and

a third group of at least one switch, each of said second group of at least one switch coupling a respective stabilizer output to said subsystem regulated bus and wherein said third group of at least one switch is controlled by said controller.

- 5    27.    The power system subsystem component of claim 19 further comprising:  
         at least one energy storage element, each of said at least one energy storage  
         element having an output; and  
         a fourth group of at least one switch, each of said fourth group of at least one  
         switch coupling a respective output of said at least one energy storage element to said  
10    subsystem regulated bus and wherein said fourth group of at least one switch is  
         controlled by said controller.
28.    The power system subsystem component of claim 19 further comprising:  
         at least one load; and  
15           a fifth group of at least one switch, each of said fifth group of at least one switch  
         coupling a respective load to said subsystem regulated bus and wherein said fifth group  
         of at least one switch is controlled by said controller.
29.    The power system subsystem component of claim 19 wherein said power source  
20    is selected from the group consisting of a battery, a generator, a fuel cell and a solar cell.
30.    The power system subsystem component of claim 19 wherein said stabilizer  
         comprises a device wherein a first voltage level is converted to a second voltage level.
- 25    31.    The power system subsystem component of claim 19 wherein said energy storage  
         unit is selected from the group consisting of a battery, a flywheel, a capacitor, and an  
         inductor.
- 30    32.    The power system of claim 15 wherein said power system supplies power in at  
         least one mode, said at least one mode selected from the group consisting of a single  
         power mode wherein a single power source supplies power for said power system, a

simultaneous power mode wherein a first power source provides power to a first power source subsystem component and wherein a second power source provides power to a second power source subsystem component, and a sequential mode wherein a first power source provides power for said power system for a first time interval and a second power source provides power for said power system for a second time interval.